

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

RM No. 9258

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SUMMARY

The Ad Hoc Telecommunications Users Committee supports the request of the Connecticut Department of Public Utility Control that the Commission abandon its prohibition against technology or service numbering overlays. Over three years ago, the Commission adopted the prohibition because it believed that separate NPAs for wireless service would put wireless service providers at a competitive disadvantage relative to wireline service carriers.

While the Commission's competition concerns may have been reasonable at the time it adopted its prohibition against technology or service number overlays, events subsequent to that decision warrant reexamination of the policy. The competition that the Commission had hoped would develop between wireless and wireline services has not happened. Wireline and wireless services serve different markets; one is a geographically fixed service, the other is a mobile services market. Different technologies are serving different markets, not the same market. Additionally, the prohibition against overlays has contributed materially to wasteful use of the country's numbering resources and the premature exhaustion of area codes. Indeed, the wireless carriers inefficient utilization of numbers is one of the chief reasons for the proliferation of area codes.

The Commission should promptly begin a proceeding to revisit its prohibition against technology or service number overlays. The facts warrant

prompt action. Delay will only exacerbate the prevailing wasteful assignment of numbers.

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In the Matter of)	
)	
Connecticut Department of)	RM No. 9258
Public Utility Control)	
)	
Petition for Rulemaking)	

Comments

On March 31, 1998, the Connecticut Department of Public Utility Control (DPUC) filed a petition urging the Commission to reconsider its prohibition against technology-specific or service-specific area code overlays. The Ad Hoc Telecommunications Users Committee (Ad Hoc) hereby supports DPUC's request that the Commission reexamine its "wireless overlay" prohibition.

The present prohibition against technology- or service-specific overlays, i.e., wireless overlays, has had extreme adverse consequences for exhaustion of geographic area codes. Over 19,000 NXX Codes, representing a potential capacity of about 190 million telephone numbers, already have been assigned to wireless services.¹ In contrast, the Cellular Telecommunications Industry Association (CTIA) has estimated that there are only about 59 million wireless customers.² Whatever modest "competitive benefits," if any, may be attributable to the present rule pale in comparison to the costs and disruptions that it, to a very material degree, has caused virtually all telecommunications users, large and small, business and residential.

¹ Bellcore, *Local Exchange Routing Guide ("LERG")*, December 1997 (December 1997 *LERG*). Of the approximately 19,000 NXX codes, 3,053 are also designated as assigned to Competitive Local Exchange Carriers (CLECs) and 2,892 are designated as assigned to Incumbent Local Exchange Carriers (ILECs).

² [HTTP://WWW.WOW-COM.COM/PROFESSIONAL/PMAIN.CFM](http://www.wow-com.com/professional/pmain.cfm).

I. THERE HAS BEEN A MATERIAL CHANGE IN CIRCUMSTANCES PERTAINING TO THE AVAILABILITY AND ASSIGNMENT OF NUMBER RESOURCES SINCE THE COMMISSION INITIALLY ADOPTED THE "WIRELESS OVERLAY" PROHIBITION

Since the beginning of 1995, the number of operational and assigned area codes in the United States has jumped from 118 to 190 at the close of 1997, and close to half of all Americans have been or will soon be required to change their area code. Cellular industry association estimates put the number of cellular telephones at more than 59 million,³ and many new wireless services and other number-utilizing wireless devices are being introduced with unprecedented frequency. Cellular and other wireless service demand for telephone numbers is the single largest source of stress on the nation's stock of numbering resources. About 900 wireless NXX codes are currently assigned in the five Numbering Plan Areas (NPAs) that make up the Chicago metropolitan area alone,⁴ and the quantity of these codes is growing faster than for almost any other service in all parts of the country.

At the same time, there is virtually no direct competition between wireless and wireline services. Usage charges for wireless "air time" may be as much as ten or more times the comparable charge for wireline services, making the former a costly substitute for the latter. In fact, the demand for geographically fixed wireline access lines is stronger than ever *despite the availability of wireless services*, confirming that consumers do not view the two as substitutes. Wireline service remains entrenched as the technology of choice for geographically fixed telecommunications requirements, and wireless services remain confined primarily to *mobile* applications. Hence, the fundamental premise of the FCC's "technology neutrality" principle, although perhaps

³ *Id.*

⁴ As of the July, 1997 *LERG*, there were a total of 911 wireless NXX codes assigned in the five Chicago-area NPAs. Bellcore, *LERG*, July 1997.

understandable at the time it was adopted, is not supported by the *facts* as they have evolved — wireline and wireless services do not presently compete, and wireless services are not competitively disadvantaged by being assigned to separate area codes.

Indeed, the Commission's focus upon "technology" may have been misplaced. The more pertinent question is whether the nature of the *services* being provided — by whatever technology — places them in direct competition with one another to a point where one would be competitively disadvantaged if separate numbering treatment is applied. In fact, a more accurate distinction, and one that should be adopted by the Commission, is between "fixed" and "mobile" *services*, rather than between "wireline" and "wireless" *technologies*. Fixed and mobile services support fundamentally different telecommunications needs, and have fundamentally different requirements with respect to their geographic identity as reflected in the number assignment.

Fixed services are by definition cemented in place, confined to a specific geographic location that is identified with great specificity both for call *rating* and for call *routing* purposes. Customers recognize the geographic nexus between a telephone number and/or area code and a particular location. Such recognition makes eminent sense with respect to fixed services, but is of far less relevance for mobile services. Indeed, with respect to *outward* calling, mobile-originated calls are rarely priced with respect to the rating area to which the mobile telephone is assigned, but are instead typically uniform throughout the mobile carrier's local service area. Similarly, network *routing* of calls directed to mobile devices (telephones, pagers, etc.) is to the MTSO

established by the mobile carrier, which may bear little or no specific relationship with the actual rating area with which the called (mobile) number is associated.⁵

Regardless of whether the Commission had legitimate expectations as to the potential rivalry between wireline and wireless technologies at the time it adopted the "technology-specific overlay" prohibition, such rivalry has not yet materialized. More importantly, there is no evidence or basis upon which one can conclude that the use of separate geographically fixed and mobile area codes would have any deleterious impact upon such competition between these two technologies that may arise in the future. There is no evidence, for example, that the existence of a wireless-only overlay in the New York City area since 1991 has competitively disadvantaged New York wireless carriers, or that these carriers and the wireless services that they provide have fared more poorly than their counterparts elsewhere in the country where wireline and wireless numbers have been and are co-mingled in the same NPA.

What has become painfully apparent is that the societal costs of splitting geographic NPAs is enormous. In an effort to explore this problem and related issues in more detail, the Ad Hoc Committee asked its economic consultants, Economics and Technology, Inc. ("ETI"), to prepare an analysis of the sources and costs of number exhaust and to make recommendations as to strategies for minimizing such costs and other adverse impacts. ETI's report, *Where Have All the Numbers Gone? Long-term Area Code Relief Policies and the Need for Short-term Reform* ("ETI report"), is attached to these Comments. As of December, 1997, some 19,000 NXX codes had been assigned to wireless services nationwide out of a total universe of 85,515

⁵ For example, there are 89 NXX codes assigned to seventeen different rating areas that are all served out of the Bell Atlantic CMBRMA0118T central office located in Cambridge, Massachusetts. While all of these codes possess identical *routing* attributes, the rate centers within which they are located span distances of as much as 12-15 miles from the Cambridge switch. December 1997 LERG.

assigned NXX codes.⁶ By contrast, only 7,593 NXX codes had been assigned to CLECs.⁷ For the entire U.S. telecommunications industry, approximately 190 NPAs and about 85,000 NXXs had been assigned as of the end of 1997. Looked at another way, the industry generally derives roughly 447 NXXs per NPA (85,000 divided 190). If the wireless carriers on average were to derive the same number of NXXs, i.e., 447, per assigned NPA, their 19,000 assigned NXX codes would occupy the equivalent of about 42 of the 190 NPAs (19,000 divided by 447). Wireless carriers are using assigned NXXs even more inefficiently than other carriers. Clearly, the requirement that wireless services be intermixed with fixed services for purposes of number assignment has materially contributed to the premature exhaustion of NPAs.

Another important development that has occurred since the Commission's adoption of the technology-specific overlay prohibition is the imminent introduction of permanent Local Number Portability (LNP) in most major metropolitan areas.⁸ The availability of LNP opens up a number of alternative strategies for conserving telephone numbers that, if pursued, could materially reduce the need for geographic splits or all-services overlays as relief measures. At the request of the Chief, Common Carrier Bureau,⁹ the North American Numbering Council (NANC) last month organized a new Working Group on Number Resources Optimization (NRO-WG), with the immediate objective of completing a report to the Commission by September 23, 1998,

⁶ Bellcore, *Local Exchange Routine Guide*, December, 1997.

⁷ *Id.*

⁸ *In the Matter of Telephone Number Portability*, FCC CC Docket No. 95-116, *First Report and Order*, July 2, 1996, at para. 20. *In the Matter of Telephone Number Portability*, FCC CC Docket No. 95-116, *First Memorandum Opinion and Order on Reconsideration*, released March 11, 1997.

⁹ March 23, 1998 letter from A. Richard Metzger, Chief, Common Carrier Bureau, to Alan Hasselwander, Chairman of the North American Numbering Council.

on the subject of "number pooling," one of the specific alternative relief measures discussed in the ETI report and which is made possible by the arrival of LNP.

To be most effective, number pooling requires the full cooperation and participation of *all* code holders within those portions of NPAs in which this relief measure is to be implemented.¹⁰ Wireless carrier participation in wireline services number portability is not being required. Indeed, some wireless carriers are exempt altogether from any form of LNP, and for the rest LNP is to be confined solely to *other* wireless services.¹¹ Wireless carriers have contended that they are incapable of participating in number pooling arrangements with wireline carriers,¹² and indeed have also claimed that they are incapable of sharing the same NXX code with a wireline service.

Despite adoption of a "technology neutrality" requirement with respect to the *assignment* of telephone numbers, wireless carriers have sought and have been granted special treatment and other exemptions from the requirements and responsibilities that are imposed upon wireline code holders. Those treatments have included "grandfathering" of previously-assigned NPA-NXX codes, the assignment of "duplicate" NXX codes in new NPAs, and in some cases the assignment of out-of-area

¹⁰ LNP is not required at the present time in rural exchanges; however, these areas are typically not the source of excessive number demand or growth, and do not contribute materially to number exhaust.

¹¹ See, e.g., Illinois Commerce Commission Docket No. 94-0315, Illinois Bell Telephone Company Petition for Approval of NPA Relief Plan for 708 Area Code by Establishing a 630 Area Code order, March 20, 1995, at 28; Illinois Commerce Commission Docket No. 95-0371, Illinois Bell Telephone Company Petition for Approval of Stipulation and Agreement of the Parties for a 312 Relief Plan, Order, November 20, 1995. In the latter case, not only were cellular carriers permitted to retain previously assigned 312 numbers in the city of Chicago, they were also permitted to retain suburban-rated 312 codes and were additionally allowed to duplicate Chicago 312 codes in the 773 NPA.

¹² In Pennsylvania, for example, wireless carriers actively opposed number pooling, number conservation and other alternatives to the creation of new area codes on the grounds that their systems were technically incapable of accommodating to these number assignment protocols. *Petition for Reconsideration*, Bell Atlantic NYNEX Mobile (BANM), Pennsylvania PUC Docket Nos. P-00961027, P-00961061, and P-00961071, July 28, 1997; *Petition for Reconsideration*, Vanguard Cellular Systems Inc., Pennsylvania PUC Docket Nos. P-00961027, P-00961061, and P-00961071, July 30, 1997.

NXX codes (i.e., in a different NPA from that which serves the rating center in which the NXX code is rated), all of which have served to further balkanize the NANP and have accelerated the rate of code exhaust in the affected NPAs. With respect to number conservation measures, wireless carriers seek preferential treatment, not neutrality.

II. THE WIRELESS CARRIERS' OPPOSITION TO PARTICIPATION IN A REASONABLE NUMBER RESOURCES MANAGEMENT AND CONSERVATION PROGRAM APPEARS TO BE BASED ON OPERATIONAL AND ECONOMIC CONCERNS

The cellular industry commenters responding to the FCC's October 20, 1997, request for comments on the "technology neutrality" for numbering administration¹³ focused entirely upon operational or economic limitations to their implementation of LNP as the cause of their purported inability to participate in LNP-based number pooling. None of these parties cited any fundamental *technological* reason why they *cannot* participate in number pooling. Indeed, no such technological impediment exists. The only "impediment" to wireless industry participation is the regulatory decision that permits these carriers to *delay* investment in the technology needed for local number portability. For example, the CTIA did not argue that wireless carriers *cannot* participate in number pooling, but merely avers that wireline carriers are unduly favored if number pooling is implemented "before wireless carriers can utilize numbers from the pool."¹⁴ Similarly, BellSouth opposed number pooling because "[u]nder the Commission's previously established LNP implementation schedules," cellular carriers will not have LNP capability at the same time as wireline carriers.¹⁵

¹³ *Common Carrier Bureau Seeks Comment on North American Numbering Council Letter Seeking Clarification of the Term "Technology Neutral,"* Public Notice, DA 97-2234 (Comm. Carr. Bur. Released October 20, 1997).

¹⁴ *Request for Comment on North American Numbering Council Letter Seeking Clarification of the Term "Technology Neutral,"* DA 97-2234, CC Docket No. 92-237 Cellular Telecommunications Industry Association, Comments, at 5.

¹⁵ *Id.*, BellSouth Comments, at 4.

There is no insurmountable technical barrier to the wireless carriers' adoption of LNP right now. Indeed, as MCI has correctly noted, "no carrier is technologically barred from investing in LNP functionality — the absence of LNP capabilities is a business choice."¹⁶ Wireless carriers were either permitted to defer, or were exempted altogether, from investing in and implementing LNP-related technology only in the context of local number portability itself, i.e., it was (presumably) based upon the Commission's determination that, for wireless carriers, the incremental competitive gains from more expeditious implementation of LNP did not justify the added costs. That determination does not create a technological differentiation or limitation, and Ad Hoc agrees with MCI that "[n]o technical limitation precludes wireless carriers from advancing their installation of LNP capabilities into their switching systems or upgrading to switches that support LNP."¹⁷ Rather, these carriers have simply elected not to make the necessary investments in equipment possessing these capabilities and functionalities.

The cellular carriers' choice should not excuse them from deploying the technology needed to participate in number pooling. BellSouth observed, "in the case of LRN-based number pooling, wireline carriers will undertake significant costs and efforts to implement the technology, changing systems and operations to accommodate a NANP resource management plan...."¹⁸ Despite this acknowledgement that wireline carriers will face these "significant costs," the wireless industry refuses to accept what is essentially a similar cost burden for the sake of establishing a more efficient use of existing numbering resources. Rejection of a number pooling solution merely because

¹⁶ *Id.*, MCI comments, at 5.

¹⁷ *Id.* at 11.

¹⁸ *Id.*, BellSouth Comments, at 5.

wireless carriers do not currently possess the switching capabilities required to support it effectively permits wireless carriers to avoid making investments that wireline carriers have been required to undertake. If in fact wireless and wireline carriers do compete with one another, rejection of a number pooling solution, if adopted, would unduly benefit wireless carriers while unduly disadvantaging wireline carriers and their customers who must then confront additional costs of non-pooling number relief solutions.

If, *arguendo*, participation by wireless carriers in a number pooling solution were *impossible* as a technical matter (which is certainly far from the case), or if wireless carriers simply refuse to make the necessary investments and other accommodations to permit them to participate in number pooling and number conservation measures as alternatives to the creation of additional area codes, these carriers have set themselves apart from other carriers and cannot argue that they should be treated like all other carriers for number assignment purposes. Technology neutrality under these circumstances becomes a preference. Wireless carriers should not be allowed to "have it both ways."

III. THE ANTI-COMPETITIVE CONSEQUENCES OF EXISTING NUMBER RELIEF SOLUTIONS ARE FAR GREATER THAN ANY ANTI-COMPETITIVE EFFECTS OF A WIRELESS- OR MOBILE-SERVICES OVERLAY

One of the primary rationales advanced by the Commission in support of the present wireless overlay prohibition was the concern that segregation of wireless services into separate area codes would competitively disadvantage these services and the carriers that furnish them.¹⁹ The Commission, however, has also recognized that similar concerns apply to wireline services, because under the permitted "all

¹⁹ *Proposed 708 Relief Plan and 630 Numbering Plan Area Code by Ameritech-Illinois*, Declaratory Ruling and Order, 10 FCC Rcd 4596 (1995) ("Declaratory Ruling"). See Connecticut DPUC Petition, page 5, footnote 8.

services overlay", new competitive local exchange carriers (CLECs) are likely to receive a disproportionate share of the "new" area code while the incumbent is able to maintain an extensive inventory of the "old" numbers simply through churn. The Commission's solution to this disparity was to impose a mandatory 10- or 11-digit dialing requirement on all calls, including those to numbers within the calling party's home NPA.²⁰ While this policy certainly has the effect of "spreading the misery" uniformly across all consumers, it does not alter the fundamental public perception that the "old" area code is preferable to the "new." This point was made dramatically clear in the April 30, 1998 *Seinfeld* episode, in which Julia Louis Dreyfus' character, Elaine Benes, became upset when the telephone company assigned her a '646' number (the new Manhattan overlay NPA) because people didn't believe that she lived in New York, and so went to great pains to obtain a '212' number, ultimately purloining it from an old lady in her building who had just died. This social commentary captured in the *Seinfeld* plot should not be lightly dismissed: retention of existing area codes is important to consumers. CLECs are placed at a far greater competitive disadvantage relative to incumbent LECs by the non-availability of NXX codes in geographic NPAs than are wireless carriers disadvantaged by being segregated into separate NPAs. As explained above and in the Connecticut petition, wireline and wireless service do not compete for the same business. CLECs and ILECs do.

²⁰ *In the Matters of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, FCC CC Docket 96-98, FCC 96-333, released August 8, 1996, at paras. 67-68.

IV. THE COST AND INCONVENIENCE OF HAVING TO CHANGE ONE'S TELEPHONE NUMBER IS FAR GREATER IN THE CASE OF WIRELINE SERVICES THAN IT IS FOR PAGING, CELLULAR AND OTHER WIRELESS SERVICES

Wireless carriers have complained that they and their customers would be required to incur extraordinary costs to change the number assigned to a mobile telephone unit. In its *Ameritech* ruling, the Commission seemed particularly impressed by these concerns:

[P]aging and cellular companies would be placed at a distinct disadvantage by the "take-back proposal" because their customers would suffer the cost and inconvenience of having to surrender existing numbers and go through the process of reprogramming their equipment, changing over to new numbers, and informing callers of the new number.²¹

However, technological changes and the proliferation of forced *wireline* number changes have materially altered the balance of burdens since the *Ameritech* ruling was issued. Modern keystroke-programmable wireless phones can be reprogrammed with a new area code or telephone number in a matter of a few seconds, and in most cases customers can perform this task themselves, either by following written instructions from their carrier or by having their carrier "walk them through it" over the phone. Most pagers do not even contain the telephone number that has been assigned to them, but are instead activated by an electronic serial number (ESN) that is burnt into a read-only memory (ROM) chip at the time the unit is manufactured. On the other hand, the cost and inconvenience of losing existing wireline numbers is far greater for *wireline* service customers than for those with pagers and cell phones. Businesses must reprint stationery and signage and notify customers, and may suffer loss of business to the extent that a potential customer does not learn of the telephone

²¹ Declaratory Ruling, at 4608.

number change and cannot contact the company in order to transact business.

Businesses, government agencies at all levels, and non-profit institutions must update their customer/citizen data bases with the new numbers, and PBX users must reprogram routing tables and, in some cases, upgrade system hardware and software in order to accommodate number or dialing pattern changes.

Significantly, most wireless customers do not publicize their cellular or pager numbers (many may not even remember their numbers), and the overwhelming majority of cellular and PCS calls are *originated at*, rather than terminated to, mobile units. One reason for this is the pricing scheme currently being used by the wireless industry, in which the wireless customer is charged for air time *on both outgoing and incoming calls*.²² Because most cellular and pager numbers are not widely publicized but are instead typically given only to a handful of family members and/or business associates, there is virtually no "cost or inconvenience" associated with "informing callers of the new number." Almost certainly, such costs are negligible when compared with those that *wireline* customers must confront when an area code is split.

Not only should the Commission rescind its wireless overlay prohibition, it should also require that all existing wireless devices be moved to wireless-specific overlay NPAs that should be established. This change can be accomplished over a reasonable transition period (e.g., 24 months); however, by initiating this process sooner rather than later, the overall cost to the wireless industry can be minimized (because all new units can be immediately assigned to the wireless NPAs), and the costs to wireline customers can also be minimized (because by accommodating wireless growth in separate NPAs the pressure to introduce new geographic NPAs will be significantly reduced).

²² *Calling Party Pays Service Option in the Commercial Mobile Radio Services*, 12 FCC Rcd, 17693 (1997).

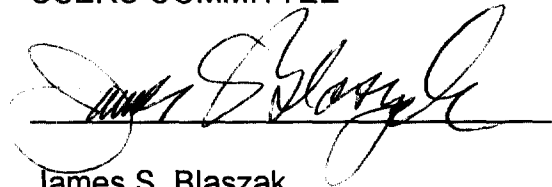
CONCLUSION

Whatever its original merits, retention of the present prohibition offers pecuniary benefits to wireless carriers while imposing onerous costs, inconveniences and other burdens upon the population generally. Whatever competitive benefit the prohibition affords wireless carriers pales when compared with the serious competitive disadvantages that are imposed on CLECs under all-services overlay solutions. The Commission should not allow its "technology neutrality" policy to be used by wireless carriers to effectively impose significant costs and disadvantages on the remainder of the telecommunications industry and end-user community.

For the foregoing reasons, the Commission should grant the DPUC petition and initiate a rulemaking to reconsider and rescind its present prohibition on wireless or, more appropriately stated, on *mobile services* overlays. Changed circumstances and consideration of affected interests supports this policy change.

Respectfully submitted,

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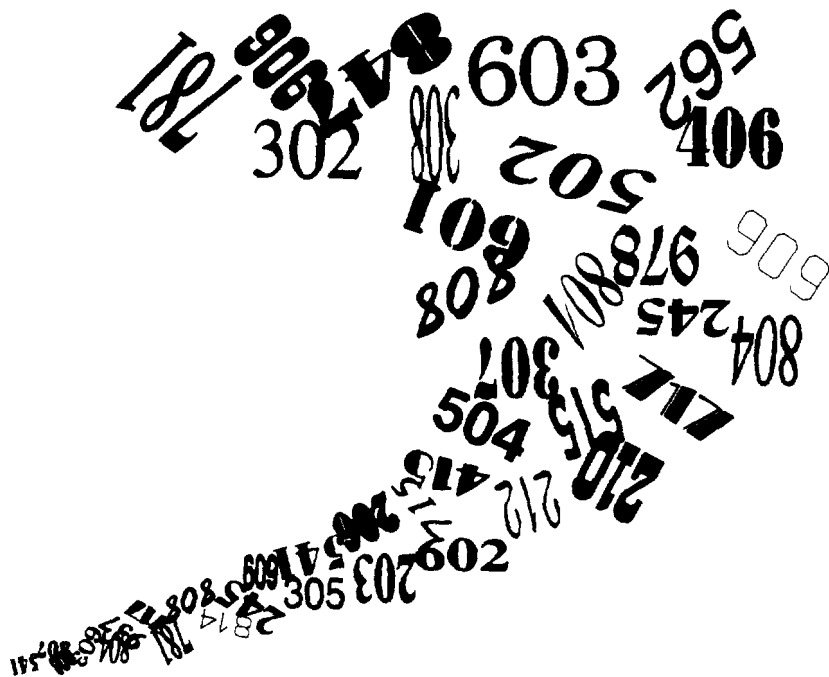
May 7, 1998

ATTACHMENT

WHERE HAVE ALL THE NUMBERS GONE?

Long-term Area Code Relief Policies and the Need for Short-term Reform

The Ad Hoc Telecommunications Users Committee
International Communications Association



March, 1998

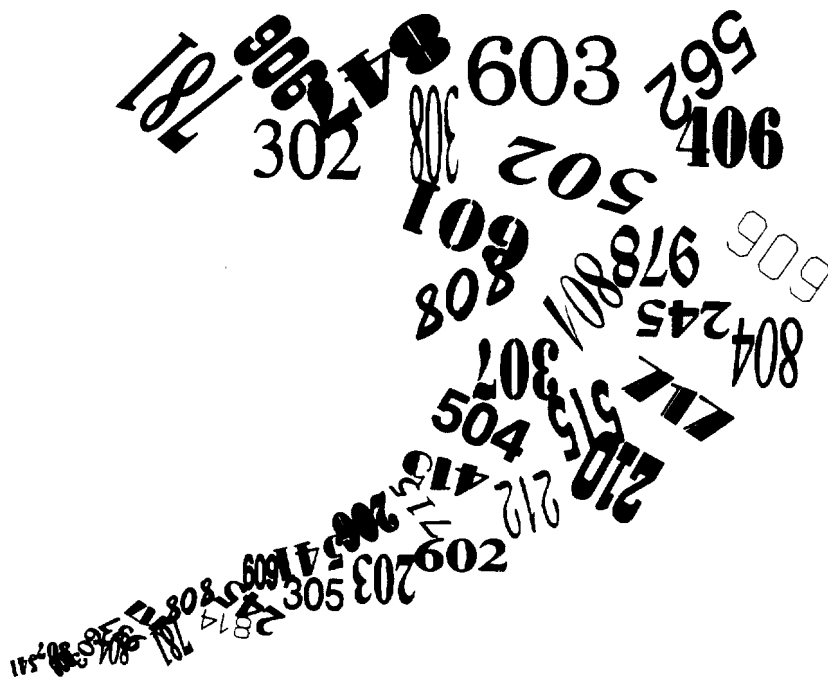


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Long-term Area Code Relief Policies and the Need for Short-term Reform

International Communications Association



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Preface

WHERE HAVE ALL THE NUMBERS GONE?

One of the most visible manifestations of the revolutionary changes underway in telecommunications is the mushrooming demand for new telephone numbers. There are many possible explanations for this condition, but ultimately these boil down to an expanding demand for existing services, the introduction and growth of new services and applications, innovative and exciting new technologies, and the entry of new telecommunications providers.

While there has been steady growth in the quantity of telephone numbers being assigned and placed in service for customers, that increase in number utilization pales in comparison with the unprecedented explosion in the *supply* of numbers that has been created by the introductions of new area codes in just the past three years. Since the beginning of 1995, the number of operational and assigned area codes in the US has jumped from 118 to 195, and close to half of all Americans will have been or will soon be required to change their area code. Each such event imposes enormous costs and burdens on *consumers* of telecommunications services — large and small — and the growing frequency with which new area codes are introduced has had a multiplicative, yet largely unmeasured, impact upon individual citizens, businesses and institutions of all sizes, and on local, state and federal governments.

It was in this context that Economics and Technology, Inc. was asked by the Ad Hoc Telecommunications Users Committee and the International Communications Association to undertake a comprehensive examination of the sources of demand for additional number resources and the various strategies that are available to satisfy those needs while minimizing adverse societal and public impact. In this report, we attempt to explain why the current number resources crisis has arisen, and propose specific policy initiatives that can be used to both satisfy the legitimate needs while not unnecessarily burdening telecommunications users. The project was conducted under the overall direction of Dr. Lee L. Selwyn, president of ETI. Contributing to this work were Susan M. Baldwin and Paul S. Keller. The views expressed in this study are those of ETI, and do not necessarily reflect the views of the sponsors.

March, 1998

Economics and Technology, Inc.
Boston, Massachusetts 02108 USA

Executive Summary

WHERE HAVE ALL THE NUMBERS GONE?

Once a relatively rare event, the introduction of new area codes is increasing at a previously unheard-of pace. While less than 15 new area codes were introduced in the US between 1961, when nationwide implementation of direct distance dialing (DDD) was substantially complete, through the end of 1994 (just prior to the January 1995 introduction of “interchangeable” NPA codes), in the three years since the beginning of 1995, the number of operational and assigned area codes in the US has jumped from 118 to 195, and close to half of all Americans will have been or will soon be subject to a change in area code. In this short period of time, more than 75 new area codes have already been or will soon be introduced, and the rate of such introductions is expected to continue and perhaps even to accelerate. The 195 area codes assigned in the United States alone create a combined capacity of more than 1.5-billion assignable numbers (that’s more than five telephone numbers for every adult and child living in the US today). So at first blush it wouldn’t seem as if there really is any shortage of numbers at all!

Most of these new area codes have taken the form of a geographic split, in which a previously-defined numbering plan area (NPA) is carved up into two or more parts. When a “split” occurs, a portion of the area (usually the principal population center) retains the preexisting area code, with the remainder being assigned one or more “new” area codes. A less frequent solution, but one that may gain in popularity as the volume of new area codes increases, is a so-called “all-services overlay” of the new area code on top of the same geographic footprint as the original code. In an overlay, most or all of the preexisting telephone numbers and central office codes retain the old area code, with all newly created central office codes and associated telephone numbers being assigned to the new area code.

Both of these solutions have serious shortcomings. They are costly to implement, both monetarily and in the disruptions and inconveniences they create both for the telephone industry and for business and residential telephone users. Yet up to now the primary responsibility for numbering policy — including the management of the nation’s numbering resources — has been tightly controlled by the incumbent local telephone companies and by Bellcore, their self-created North American Numbering Plan Administrator (NANPA).

(Lockheed Martin IMS has now assumed responsibility for NANP administration.) The telephone industry's solution to the claimed "shortage" of telephone numbers has been simply to create new ones. This "brute force" approach — like printing more money when the treasury is empty — is costly to all concerned and serves only to defer (and exacerbate), rather than to *solve*, the number exhaust problem. At long last, however, state regulators and the public at large have begun to challenge both the industry's claims as to the actual need for new area codes as well as its strategy of constantly bringing new codes on line. It may have been long in coming, but the general public has now finally taken an interest in numbering issues, and has begun to actively oppose the simplistic "add more numbers" quick-fix solutions offered up by the ILECs. Growing public dissatisfaction with the telephone industry's management of this public resource has prompted a number of state regulators — before whom the "front line" of the area code battles are being played out — to reexamine traditional number relief practices and to develop and implement less disruptive and more permanent alternatives.

The purposes of this paper are (a) to examine the basis for and validity of the telephone industry's contention that number shortages are growing and that the proliferation of new area codes must continue unabated, and (b) to offer and explore alternative solutions that are less costly and disruptive to the public generally and that can offer a more permanent, long term solution than the current practice of continually creating new telephone numbers.

Reports in the popular press generally blame the growth of modems, fax machines, and cellular telephones for the current number exhaust problem. But there are already plenty of telephone numbers — at least in the aggregate. The problem is that the numbering system is highly fragmented, resulting in extreme shortages of numbers in some areas and millions of unused and unusable numbers in others. The introduction of competitive local exchange carriers exacerbates this fragmentation not because of their existence, but because the incumbent local telcos who manage numbering resources have failed entirely to accommodate the number administration process to a multi-carrier environment.

Under existing assignment practices, numbers are doled out to carriers in blocks of 10,000 — in entire 3-digit central office code (NXX) blocks. Each carrier is required to utilize at least one such NXX code in each "rating area" in which it operates. Sharing of 10,000-number NXX blocks among several carriers operating within the same rating area, or among several different rating areas, while technically feasible and administratively permissible, is nonetheless resisted by most of the ILECs that serve as number administrators. Thus, a new competitive local carrier ("CLEC") must be assigned an entire 10,000-number NXX code in each rating area in which it offers service, even if only 1,000, 500, or even fewer numbers are actually in use. In fact, ILEC number administrators have been issuing new NXX codes to CLECs, wireless carriers, and to themselves with little regard for actual demand for the underlying number-using services. The precise reasons for this continuing wasteful use of numbers is not entirely clear; what is clear, however, is that the

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administration of the North American Numbering Plan has been wasteful and costly both to end users and to new local service competitors.

The long term solution for number resources management is to reduce the degree of fragmentation in the present system, to allow the same NXX codes to be shared across larger geographic areas and among multiple local service providers. The forthcoming implementation of permanent local number portability (LNP) will help make such de-fragmentation possible, as will programs aimed at consolidating multiple rating areas so as to permit individual NXX codes to be assigned across larger geographic areas. The immediate problem: How to “buy time” between an immediate number shortage in a particular NPA and the date at which one or more long term solutions can become operational.

A number of state regulators are attempting to steer such a course. However, standing squarely in the way of any interim or permanent resolution has been the FCC’s 1995 Declaratory Ruling under which states are required to adopt so-called “technology neutral” numbering policies and, in particular, are prohibited from establishing “wireless only” overlays. Wireless carriers have in recent months asserted that the FCC’s “technology neutrality” policy also precludes states from utilizing “number pooling” and local number portability as a means of sharing NXX codes among multiple carriers, on the basis that wireless carriers have been either partially or entirely exempted by the FCC from participation in number portability programs.

The use of wireless overlays and/or the adoption of interim and permanent measures that allow a subset of any particular NXX to be assigned to individual CLECs may provide all the tools that are needed in order for regulators to bridge the gap between today’s short-term number exhaust problems and tomorrow’s long-term solutions. Cooperation among all industry participants is essential and, in any case, regulators must be empowered to consider and adopt number relief solutions that fully consider all short term and long term societal costs.